

Cuttlefish are better with numbers than small children

By Elle Hunt, The Guardian, adapted by Newsela staff on 09.21.16

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Broadclub Cuttlefish guarding clutch, *Sepia latimanus*, Micronesia, Palau. Reinhard Dirscherl/ullstein bild via Getty Images

New research suggests cuttlefish can count better than a 1-year-old human. The sea creature also prefers quality over quantity when it comes to food.

A study of 54 one-month-old cuttlefish was carried out by Tsang-I Yang and Chuan-Chin Chiao. They are researchers at the National Tsing Hua University in Taiwan, in east Asia.

The scientists think that cephalopods count possible prey, such as shrimps, crabs and fishes. Cuttlefish are cephalopods, a type of mollusk that also includes the squid and the octopus. After counting, the cephalopods make several judgment calls in deciding whether or not to strike.

Numbers Add Up For Cuttlefish

The cuttlefish were presented with different numbers of live shrimp. They appeared to have "number sense." The cuttlefish repeatedly showed it preferred the groups with the most shrimp.

Cuttlefish took longer to decide when they were comparing a large group of shrimp with another large group of shrimp. It got harder to count them. They didn't seem to care how close together the groups of shrimp appeared.

This seemed to show the cephalopods were taking time to count the individual shrimp of each option, rather than making a decision at a glance.

Babies, Monkeys Don't Do Numbers As Well

They pointed to similar studies of 1-year-old humans, which found that babies could distinguish between one and two items, and two and three items, but no higher. Rhesus macaque monkeys could judge quantities of only up to four.

Cuttlefish are able to tell the difference between one shrimp and five shrimp, as well as between four shrimp and five shrimp. This led the researchers to conclude that they are at least equal to infants and primates in terms of their ability to count.

Given the choice between one live shrimp and two dead shrimp, the cuttlefish also chose the one shrimp because it was alive.

The researchers were particularly struck by their response to the choice between one large live shrimp and two small live shrimps. Their decision depended on how hungry they were.

If the cuttlefish was hungry, it chose the single shrimp. If it was not hungry, it chose the two smaller shrimps.

The researchers concluded this was because the cuttlefish was trying to be safe, with one shrimp in a group posing less of a threat than targeting one lone prey. It also seems to be a smart solution to the widespread problem of having to make decisions.

Human Decisions Aren't That Different

It is not so different from choices humans make. When people are hungry, they make riskier decisions, too. They might spend more money on food, for example.

Cephalopods have the most advanced brains of any invertebrates, or spineless animals like insects and crustaceans. The animals are known for their sophisticated brain activity. For example, they have the ability to change color in milliseconds, which they often do to hide from their enemies.

Earlier this year, Australian researchers found that cephalopod numbers the world over were steadily increasing. This could be a result of warmer ocean temperatures and reduced fish populations.

Quiz

- 1 Which answer choice BEST describes what scientists have learned about cuttlefish?
 - (A) Cuttlefish are more intelligent than any other cephalopod that was included in the research.
 - (B) Cuttlefish can distinguish larger groups of prey by counting individual animals.
 - (C) Cuttlefish are cautious animals who avoid risk by hunting in groups.
 - (D) Cuttlefish base their hunting decisions on quick estimates of available prey.

- 2 Read the section "Human Decisions Aren't That Different." What is the MOST likely reason why the author included a reference to humans and hunger?
 - (A) to show how humans make bad decisions
 - (B) to explain why they undertook the research
 - (C) to compare humans and cephalopods
 - (D) to illustrate how hunger affects animals similarly

- 3 Read the paragraph from the section "Numbers Add Up For Cuttlefish."

The cuttlefish were presented with different numbers of live shrimp. They appeared to have "number sense." The cuttlefish repeatedly showed it preferred the groups with the most shrimp.

Which of the following phrases from the article helps you understand the meaning of "number sense"?

- (A) quality over quantity
- (B) to count
- (C) distinguish between
- (D) equal to

- 4 Read the sentence from the section "Babies, Monkeys Don't Do Numbers As Well."

The researchers were particularly struck by their response to the choice between one large live shrimp and two small live shrimps.

How does using the word "struck" affect the tone of the sentence above?

- (A) It emphasizes the scientists' interest.
- (B) It supports the scientists' research.
- (C) It indicates the scientists' disbelief.
- (D) It highlights the scientists' confusion.